Midsummer Mornings: Domestic PV & Storage

Enphase Microinverters & Battery Storage

Martyn Berry & Mike Haines 14th May 2020





Your Presenters



ENPHASE

Mike Haines

International Sales Manager.

- Former Enphase Director of North American Sales.
- First Sales Director for Enphase UK and Regional Director for Southern Europe.
- Now, leading sales and marketing in UK, Spain and developing markets.





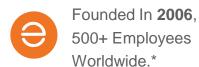
Martyn Berry

An Independent consultant to PV solar, storage & EV charging companies.

- Former European Director of Service at Enphase & Principle Engineer at Solarcentury.
- 20 years in grid connected PV.
- Assisting Enphase in the UK & Ireland.



Enphase: The Proven Leader





Market Leading
Residential Inverter
in North America.



Headquarters: **Fremont, California** with Offices Globally.



1 Million+ Systems in 130+ Countries.*



Our Customers are
Homeowners, Installers
& Module Partners.



2019 Revenue: **624.3 Million USD**. NASDAQ listed 2012.



25+ Million Microinverters7GW+ (DC) Capacity.20 TWh energy produced.



30MWh+ Energy Storage Shipped.





Enphase: The Proven Leader



Founded In **2006**, 500+ Employees Worldwide.*



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Awarded Top PV Brand 2019 in Europe by EuPD

for the third time in a row.



Enphase Value Proposition







Safest Solar & Storage



Enphase Value Proposition

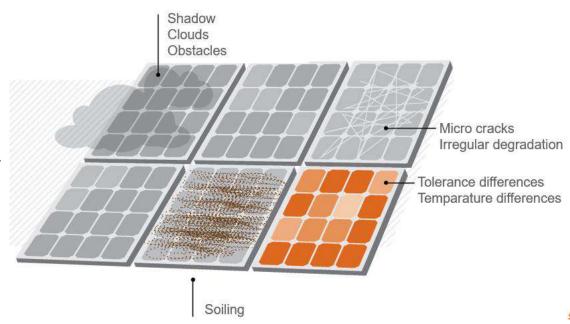
- P High Performance
- R Superior Quality & Reliability
- Simple Design & Installation
- Safest Solar & Storage
- Intelligent Monitoring & Control





Enhanced Performance

- Enphase Microinverters
 generate more energy
 than other inverters
 due to independent
 operation, high efficiency
 & burst mode.
- Advanced monitoring technology enables increased uptime.

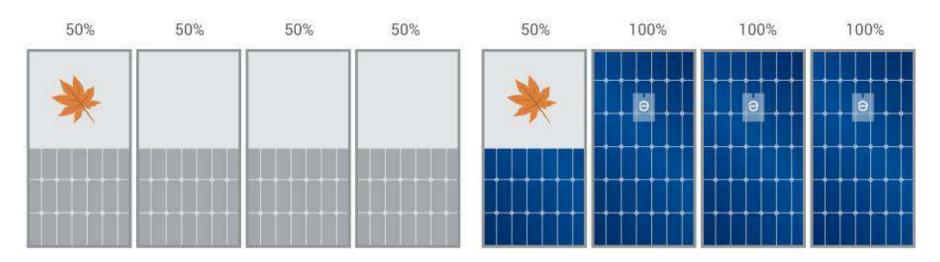






String Inverter

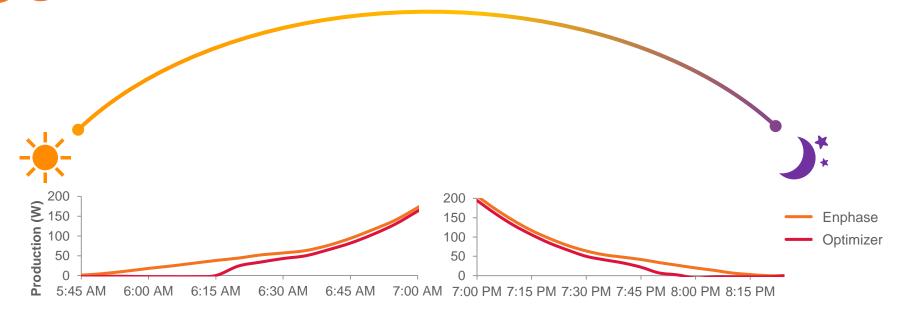
Enphase Microinverters



- Understand the benefit of independent operation, module level MPPT.
- Not just shade ...module mismatch, irregular degradation due to aging.



P Enhanced Performance



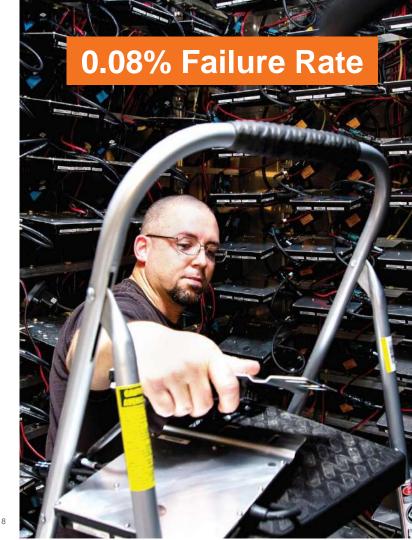
- Burst mode technology produces more power in low light.
- Generate more energy during the life of your system.





Superior Quality & Reliability

- > 1 million test hours per product.
- 75%* less components than strings & optimizers, zero moving parts.
- No single point of failure, each Microinverter works independently.
- Enables us to provide industry leading 25-year inverter warranty.
- Same inverter technology & modular architecture applied to our battery solutions.





Top

Bottom

Superior Quality & Reliability

String





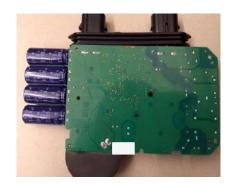
Optimizer





Enphase









(R) Superior Quality & Reliability







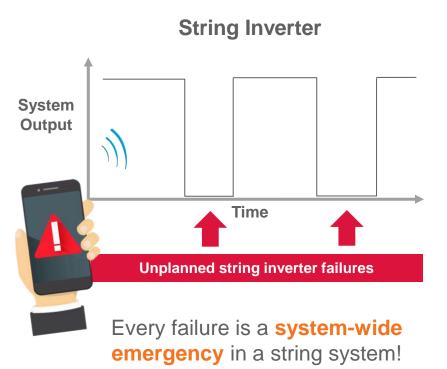
Storage	Enphase IQ7	SolarEdge	String
Single Point of Failure	No	Yes	Yes
DC or AC	AC (Max. 60V)	DC (600V+)	DC (600V+)
Scalable	Yes (Min 1 Module)	No (Min 4 Modules)	No
Burst-mode Technology	Yes	No	No
DC/AC Cable	Only AC Cable	DC & AC Cable	DC & AC Cable
Module Level Monitoring	Yes	Yes	No

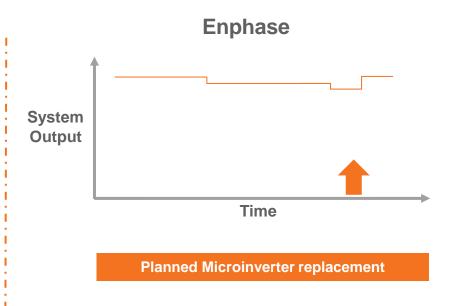
Microinverter vs. Optimizer vs. String





Superior Quality & Reliability





No system-wide outages or emergencies with Microinverters.





Simple Design & Installation

- Lower upfront engineering design.
- Easy on-site design modifications & future expansion.
- Simple PV array layout, mixed orientations without MPPT problems.
- Modular, **scalable battery** storage solutions, system from single manufacturer.



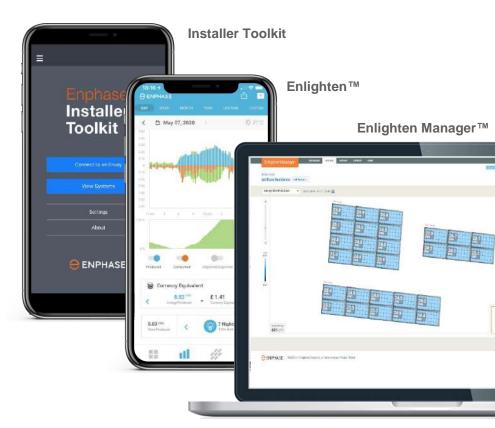


- String inverters introduce 600V DC into the building, Microinverters don't.
- No live DC working for installer.
- Operating at low DC voltage, arc faults self-extinguishing.
- Automatic rapid shutdown is built into Microinverter, immediately de-energised when main isolator is set to OFF.
- Battery solution use same all AC approach & safest available LiFePO chemistry.

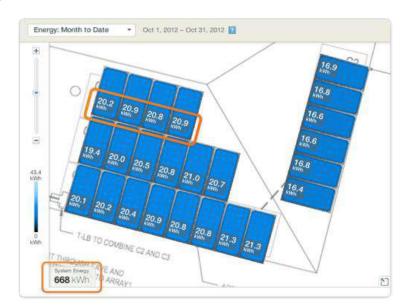


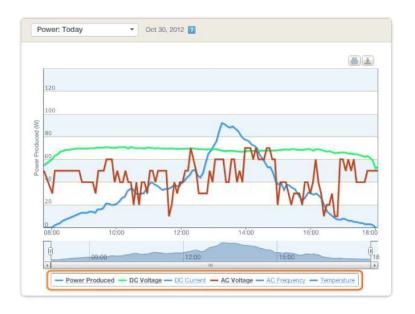


- Enphase Cloud Services, tailored software solutions for easy owner & installer access to data & settings.
- Free of charge for owner & installer.
- Software Defined
 Architecture patented
 semiconductors, over-the-air
 upgrades & troubleshooting.









- Enlighten Manager The installer's view of all installed sites.
- Rapid identification of problems using full AC & DC module data.
- Plan your maintenance work before heading to site.











- Enlighten App Owner's access to useful, informative system data.
- Module level kWh production data.
- Integrated production, consumption & storage data.



Enphase Value Proposition





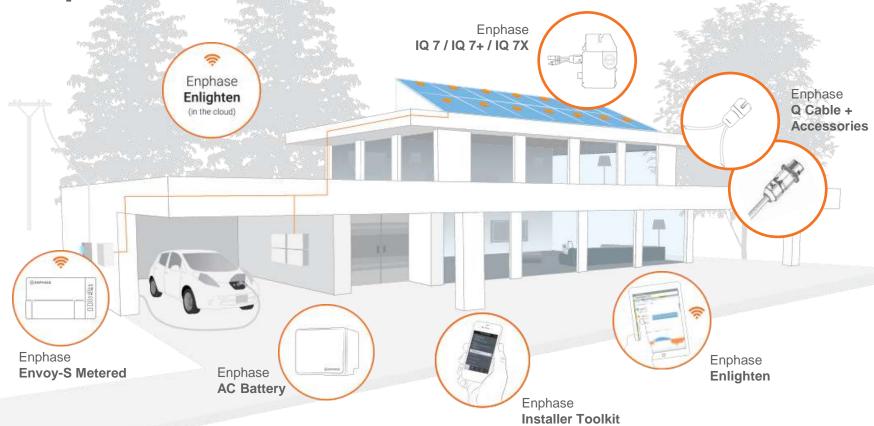








Enphase Product Overview





IQ 7 Overview

- Up to 96 Cell / 460W Modules.
- 96.5% EU efficiency.
- Plastic enclosure.
- IP67, fully silicone potted.
- Class II double insulated.
- Light weight, Non-corrosive.
- G98/99 Type Tested for UK.
- G100 Export limiting capable.
- EN50438 Compliance for Ireland.



IQ 7 Series Microinverters







IQ 7 Micro: 240 VA

- Supports 60-cell.
- Up to 340W Modules.
- 48V DC Maximum.

IQ 7+ Micro: 290 VA

- Supports 60 & 72-cell.
- Up to 420W Modules.
- 60V DC Maximum.

IQ 7X Micro: 315 VA

- Support 96-cell.
- Up to 435W Modules.
- 80V DC Maximum.



Microinverter Warranty & RMA Process

- Complete coverage with an industryleading 25-year warranty and life expectancy to match PV modules.
- Self-service RMA process online and available directly from Enphase 24-7 via Enlighten & Installer Toolkit App.
- Replacement Reimbursement available for years 1 & 2.*





Enphase Q Cable

- Lightweight 2-core cable.
- New connectors:
 - Clear cable numbering.
 - Simpler cable management.
- Lighter, higher-density packaging.
- Available for single & three phase.





Enphase Connectors, Seals, Tools & More



- All-Enphase cabling solution.
- Field wireable connectors for an in-line splice kit.
- Available for single & three phase.



Enphase AC Battery Overview

- Modular 1.2kWh solution & 270W power.
- LiFePO chemistry, TÜV certified.
- 96% round-trip efficiency.
- 23kg, one-person lift.
- Enlighten monitoring & configuration.
- Time of use and night-time charge options.
- 80% capacity 10-year or 3,650 cycles warranty.





Enphase Envoy-S Metered

 Microinverter and Battery management & control.

 Realtime production & consumption metering using current transformers (supplied).

 CTs supplied with 4m twisted pair cable, extendable to 85m with 1mm².

 Hard wired CTs only, required for G100 compliance where export limiting is used.

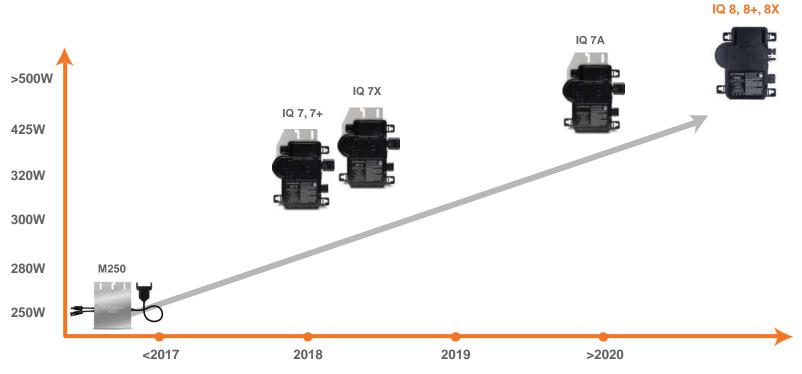






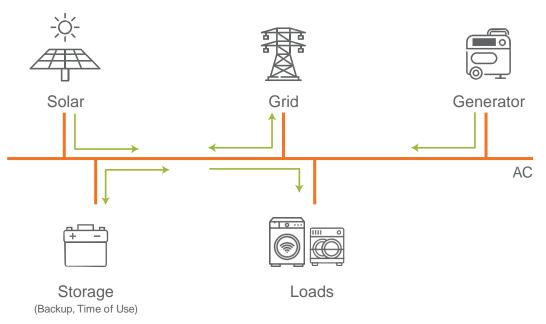
High Power, High Performance Microinverters

Eight Generations of Innovation

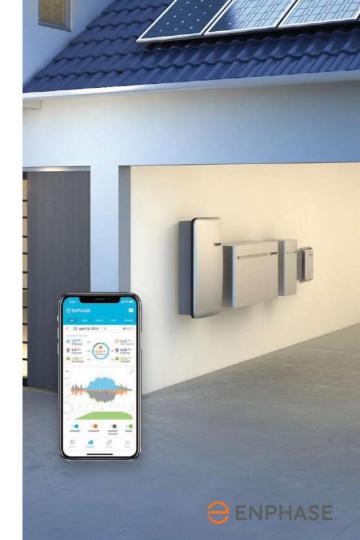




Ensemble Energy Management Technology



 Automatically manages energy resources such as solar, storage, grid, loads & generator.



Enphase Storage Portfolio

2016

Q1 2019

>2020



1.2kWh Modular System



ACB 1.0
First Generation
ToU optimization

1.2kWh Modular System



ACB 1.5
Second Generation
Cost Reduction

3.3kWh,10kWh Modular Systems with Backup



Encharge 3 3.36kWh 1.28kVA 1x 44kg

Encharge 10 10.08kWh 3.84kVA 3x 44kg



Marketing Collateral









Future Enphase Webinars

Intermediate – Envoy Metered Installation Friday 22nd May 2020 9.30am BST

Advanced - Using Enphase Enlighten Cloud Friday 26th June 2020 9.30am BST

Register at enphase.com/en-uk/events

On Demand training at gotostage.com/channel/enphase-uk





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Install Different



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